

What is Claimed is:

1. An optical transmitter comprising:

a header;

5 a hybrid subassembly;

a laser mounted on the header;

a laser driver mounted on the hybrid subassembly; and

an air trench formed between the header and the hybrid subassembly.

10 2. The optical transmitter of claim 1, wherein the air trench provides thermal decoupling of the laser driver from the laser.

2. The optical transmitter of claim 1, wherein the header includes a first pedestal and a second pedestal, wherein the laser is mounted on a first pedestal and the laser  
15 driver is mounted on the second pedestal, and wherein the first pedestal is located on the header and the second pedestal is located on the hybrid subassembly.

3. The optical transmitter of claim 1, wherein the air trench is formed between the first pedestal and the second pedestal, and wherein the air trench provides thermal  
20 decoupling of the laser driver from the laser.

4. The optical transmitter of claim 3, wherein energy is applied from the laser driver to the laser through a waveguide disposed remotely from the header.

5. The optical transmitter of claim 4, wherein the waveguide is a path that directs energy transmitted from the laser driver to the laser.

6. The optical transmitter of claim 5, wherein the path has a curvature that directs the energy at a concentrated region in the laser.

7. The optical transmitter of claim 1, wherein the laser is a semiconductor laser.

8. The optical transmitter of claim 1, further comprising an external cooler thermally coupled to the header.

9. The optical transmitter of claim 1, wherein the header includes a first pedestal and a second pedestal, the laser driver is mounted on the first pedestal and the laser is mounted on the second pedestal.

10. The optical transmitter of claim 9, where the air trench forms a sufficient vertical distance to limit thermal coupling between the laser driver and the laser via the first pedestal and the second pedestal.

11. The optical transmitter of claim 9, wherein the first pedestal includes a first material at a location adjacent to the laser driver and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material.

12. The optical transmitter of claim 9, wherein the second pedestal includes a first material at a location adjacent to the laser and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material.

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13. The optical transmitter of claim 9, wherein the first pedestal includes a first material at a location adjacent to the laser driver and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material, and wherein the second pedestal includes a third material at a location adjacent to the laser and a fourth material at a location adjacent to the lower portion of the air trench, the fourth material has a lower thermal conductivity than the third material, wherein thermal energy is limited from passing from the fourth material to the third material.

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14. A method of producing an optical transmitter comprising:

providing a header;

providing a hybrid subassembly;

mounting a laser on the header;

mounting a laser driver on the hybrid subassembly; and

providing an air trench in the header between the location on the header at which the laser is mounted and the location on the hybrid subassembly at which the laser driver is mounted.

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15. The method of claim 14, further comprising forming an air trench in the header that provides an thermal decoupling of the laser driver from the laser.

16. The method of claim 14, wherein the header includes a first pedestal and a  
5 second pedestal, wherein the laser is mounted on a first pedestal and the laser driver is mounted on the second pedestal, and wherein the first pedestal is located on the header and the second pedestal is located on the hybrid subassembly.

17. The method of claim 14, further comprising forming the air trench between  
10 the first pedestal and the second pedestal, wherein the air trench provides thermal decoupling of the laser driver from the laser.

18. The method of claim 14, further comprising applying energy from the laser  
15 driver to the laser through a waveguide located remotely from the header.

19. The method of claim 18, wherein the waveguide is a path that directs the energy from the laser driver to the laser.

20. The method of claim 19, wherein the path has a curvature that directs the  
20 energy at a concentrated region in the laser.

21. The method of claim 14, wherein the laser is a semiconductor laser.

22. The method of claim 14, further comprising thermally coupling an external cooler to the header.

23. The method of claim 16, wherein the first pedestal includes a first material at a location adjacent to the laser driver and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material.

24. The method of claim 16, wherein the second pedestal includes a first material at a location adjacent to the laser and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material.

25. The method of claim 16, wherein the first pedestal includes a first material at a location adjacent to the laser driver and a second material at a location adjacent to the lower portion of the air trench, wherein the second material has a lower thermal conductivity than the first material, and wherein the second pedestal includes a third material at a location adjacent to the laser and a fourth material at a location adjacent to the lower portion of the air trench, the fourth material has a lower thermal conductivity than the third material, wherein thermal energy is limited from passing from the fourth material to the third material.